UNITED STATES SPECIAL OPERATIONS COMMAND

Proposal Submission

The United States Operations Command's (USSOCOM) mission includes developing and acquiring unique special operations forces (SOF) equipment, material, supplies and services. USSOCOM is seeking small businesses with a strong research and development capability and an understanding of the SOF operational characteristics. The 4 topics represent a portion of the problems encountered by SOF in fulfilling its mission.

Inquires of a general nature or questions concerning the administration of the SBIR program should be addressed to:

United States Special Operations Command
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USSOCOM has identified 4 technical topics for the FY02.1 solicitation and proposals will only be accepted for those topics. The USSOCOM Program Executive Officers (PEOs) responsible for the research and development in these specific areas initiated the topics and are responsible for the technical evaluation of the proposals. Proposal evaluation factors are listed below and each proposal must address each factor in order to be considered for an award. Prior to December 1, 2001, scientific and technical questions may be directly asked of the topic author, and after that, through the DTIC SBIR Interactive Technical Information System (SITIS).

The maximum amount of SBIR funding for a USSOCOM Phase I award is $100,000 and the maximum time frame for a Phase I proposal is 6 months. A Phase I proposal for less than 6 months and/or less than $100,000 is encouraged where low risk technologies are being proposed.

USSOCOM will request Phase II proposals on a case by case basis. The proposal must be structured as follows: the first 10-12 months (base effort) should be approximately $375,000; the second 10-12 months (option) of incremental funding should also be approximately $375,000. A Phase II proposal for less than 24 months and/or less than $750,000 is encouraged. The maximum amount of **SBIR funding** allocated for a USSOCOM Phase II award is $750,000 and the maximum time frame for a Phase II award is 24 months. Proposals should be based on realistic cost and time estimates, not on the maximum time (months) and dollars. The cost of the project is based on the overall amount of hours spent to accomplish the work required and the overall term of the project should also be based on the same effort. In preparing the proposal, (including the plan of objectives and milestones), firms should consider that workload and operational tempo will preclude extensive access to government and military personnel beyond established periodic reviews.

Evaluation Criteria – Phase I & II

1) The soundness, technical merit, and innovation of the proposed approach and its incremental progress toward topic or subtopic solution.

2) The qualifications of the proposed principal/key investigators supporting staff, and consultants. Qualifications include not only the ability to perform the research and development but also the ability to commercialize the results.

3) The potential for commercial (Government of private sector) application and the benefits expected to accrue from this commercialization.

Selection of proposals for funding is based upon technical merit and the evaluation criteria included in the solicitation. As funding is limited, USSOCOM will select and fund only those proposals considered to be superior in overall technical quality and most critical. USSOCOM may fund more than one proposal in a specific topic area if the technical quality of the proposal is deemed superior, or it may fund no proposals in a topic area.

Electronic Submission Instructions

All proposal information must be received electronically via the DoD SBIR/STTR Submission site. To submit, proceed to http://www.dodsbir.net/submission. Once your firm has been registered, they may prepare (and edit) Company Commercialization Report Data, prepare (and edit) Proposal Cover Sheets(s) (formerly referred to as Appendix A and B), complete the Cost Proposal form, and upload corresponding Technical Proposal(s). The electronic proposal must be

transmitted to the site by 3:00PM EST on January 15, 2002. The proposal submission, exclusive of the Company Commercialization Report and the cost proposal must not exceed 25 pages.

Paper copies will not be considered. A complete electronic submission is required for proposal evaluation. An electronic signature is not required on the proposal. Proposal evaluation will be accomplished via a secure web site. Please call the nearest Electronic Commerce Regional Center for assistance in uploading proposals. Please note that there have been problems in the past with AOL uploads, therefore suggest using an alternate internet service provider (ISP) for files larger than 5MB. It is strongly suggested the proposal be submitted 3-5 days prior to closing date to ensure complete submission. Firms are entirely responsible for complete and timely submission of the proposal.

Refer to the on-line help area of the DoD SBIR/STTR Submission site for questions, troubleshooting, etc. For further assistance, contact the help desk at SBIRHELPDESK@pbcinc.com or 866-216-4095.

USSOCOM offers information on the Internet about its SBIR program at http://www.socom.mil and http://www.acq.osd.mil/sadbu/sbir.

Electronic Technical Proposal Upload

The term "Technical Proposal" refers to the part of the submission as described in Section 3 of the Solicitation. WordPerfect, Text, MS Word, RTF, and PDF are the only acceptable formats for proposal submissions. You are encouraged, but not required, to embed graphics within the document. When including images, care should be taken to ensure images are not of excessive size. A resolution of 200 dpi or below is requested for all embedded images. Please use standard fonts in order to prevent conversion difficulties. An overall file size of 5MB or less is recommended for each electronic proposal submission.

You will receive a confirmation page via the submission site once the proposal has been uploaded. The upload will be available for viewing on the DoD SBIR/STTR Submission site within 24 hours. It is within your best interest to review the upload to ensure the server received the complete file. Questions or problems should be directed to the help desk as mentioned above.

You are responsible for performing a virus check on each proposal to be uploaded electronically. The detection of a virus on any submitted electronic technical proposal may be cause for the rejection of the proposal. *USSOCOM will not accept e-mail submissions.* You should contact your Internet Service Providers to if you have questions concerning the provider's file size transmission allowance.

USSOCOM
FY 2002.1 SBIR TOPIC INDEX

SOCOM 02-001 TITLE: Multi-Spectral Low-Light Imaging

TECHNOLOGY AREAS: Sensors

OBJECTIVE: Investigate the technical feasibility of fielding reproducible, meaningful, real-time color Image Intensification (I2) devices. This innovation would remove the existing constraint of monochrome (green) imagery of current night vision devices and provide color imagery in its place. Producing color imagery would allow multiple users from different physical locations to identify targets in the scene by color content.

DESCRIPTION: With the recent advances in night vision device performance, a re-examination all aspects of NVG mission performance (i.e.; ability to navigate, detect and maneuver on the battlefield) could produce a dramatic overall increase in operational capability. Current "monochrome" representation of the scene, traditionally exploited by the NVG user communities, could be significantly enhanced if a reproducible color image were presented to the user. Image Intensifiers (I2) function in a range which covers the photopic (light visible to the human eye under daylight conditions) wave band plus (& especially important for low light performance) the near infrared region, which is undetected by the unaided eye. The issue to be examined, is how to create a viable color night vision capability without investing in technologies that are not currently ready for production.Phase I:

PHASE I: Objectives are to:
(1) Model the proposed system configuration for producing color night vision imagery.
(2) Calculate system performance using current performance modeling techniques associated with standard night vision characterization algorithms.
(3) Compare the theoretical performance of the proposed Color Night Vision System to standard night vision system performance.
(4) Develop design and plan to construct a brass-board concept demonstrator.

PHASE II: The Phase II objectives are to:
(1) Build the brass-board concept demonstrator.
(2) Measure system performance under laboratory conditions. Compare results to standard night vision systems.
(3) Measure system performance under real-world scenarios, acquire video footage from Color and standard systems for side by side comparison.
(4) Determine the best approach for transition from brass-board configuration to a fieldable system configuration.

PHASE III DUAL-USE APPLICATIONS: This capability will provide an immediate, increased capability throughout the Military, Intelligence, Law Enforcement, and Search & Rescue communities. There are a host of user communities that have expressed specific interest in the ability to see color imagery under low light level conditions. Law Enforcement, Medical, Search and Rescue, and Fire Fighting communities have expressed specific interest in this capability. The production devices have wide spread use in non-destructive testing, preventative maintenance, medical, forensic, and commercial security applications.

SOCOM 02-002 TITLE: Portable Wireless Monitoring Station

TECHNOLOGY AREAS: Information Systems

OBJECTIVE: SOF tactical users lack a small package that permits them to monitor RF and wireless communications. Having this capability will save lives during dangerous missions. This SBIR will research, design and build a rugged, inexpensive tactical monitoring system for deployed SOF personnel. The system will attempt to use the latest in commercial off the shelf (COTS) and Government off the shelf (GOTS) equipment. The system should use plug and play technology, and provide for future upgrades as technology and signals change.

DESCRIPTION: Wireless communications are a growing mode of communications in all parts of the world. SOF need to be able to monitor communications for force protection. A package that can be integrated into the Joint Threat Warning System (JTWS) Manpack, Team Transportable, Maritime, and/or Air variants will permit SOF to monitor entire regions covered by INMARSAT.

The system will have the following requirements:
- Small and compact (requirement less than 250 cubic inches, objective of 150 cubic inches).
- Ruggedized package for harsh environments, to include no fans.
- Low power (<50W).
- 9-16VDC input power (9-25VDC objective). The Monitoring Station will contain NO internal power; it will be powered via the customer’s chosen power source.

- Coherent LO ability for direction finding (DF) applications.
- At least two tuners covering at least 30 to 3000 MHz (objective of 10MHz to 10GHz).
- At least 30MHz bandwidth.
- At least 80dB dynamic range.
- Target database (objective of 5,000 entries).
- NT operating system with removable hard drive.
- Support for 24 control / voice channels.
- Recognize G3 fax signals, and detect the presence of G3 fax and data modem answer tones.
- Support for multiple fax formats.
- Objective of detecting and analyzing spread spectrum/frequency-hopping signals.

The system should utilize DSP technology that is software configurable. It should have the capability of being software upgraded when signals/ configurations change. It will have as an objective to be Joint Component Architecture Framework (JCAF) compliant. Note: SPAWAR Systems Charleston can assist the bidder with the JCAF software. The system should be remoteable using TCP/IP or other standard format. Successful proposals will use novel technology to achieve substantial enhancements to equipment size, weight, performance, reliability, power consumption, data rate speeds, and/or cost or offer new ways of computing, communicating, sensing or displaying information.

PHASE I: Research and propose system design that will provide plan to meet the above requirements and objectives, stressing the small size, power, and the number of formats that can be detected. Efforts should focus on technological approach for addressing the requirement.

PHASE II: Significant interaction with SOF tactical users will be required to ensure that the system being designed will meet their needs. Develop two (2) system prototypes. Will be required to demonstrate in a realistic tactical environment. Conduct limited testing to prove feasibility over a seven day mission scenario.

PHASE III DUAL-USE TECHNOLOGIES: This system is designed primarily for tactical operations, and has application in at least two USSOCOM programs. It will also have application with the other military services and law enforcement agencies. An enterprising company could spin this product off into the commercial market as a wireless maintenance device.

KEYWORDS: INMARSAT, Tactical, Intelligence, monitoring system, cellular, wireless, fax, signals, G3.

SOCOM 02-003 TITLE: Lightweight, Disposable Air Cargo Delivery System (DACD)

TECHNOLOGY AREAS: Air Platform

DESCRIPTION. Lightweight, Disposable Air Cargo Delivery System (LDACDS) to provide Special Operations Forces (SOF) with long-range airdrop resupply and sustainment during operations across the spectrum of SOF operations. This capability to resupply mobile and stationary units operating behind enemy lines with POL, ammunition, weapons/commo, water/food without having to land and or slow down in the air, therefore greatly reducing air-drop signature and greatly improving survivability.

There are no specific technologies of interest. The Services have been working this area for a long time, and tried many different approaches to precision airdrop of small bundles, to include using parachutes, gliding deccelerators, cushioned munitions and pallets. All of these solutions can work, but none of them are optimal. The author is open to any ideas that meet the requirement to include new technologies and application of existing technologies. The cheaper, simpler, and more effective the solution in terms of range, accuracy, signature, and payload, and employment complexity the better. A range of solutions would even be considered for different payloads and range, however, nominal requirements are to deliver 60 pounds of emergency supplies from a wide variety of aircraft with drop speeds of up to 130 knots to within 30ft of intended location.

PHASE I: Compare available and developing technologies against resultant capabilities to provide the government with alternative approach(es) to test, at the concept level. Employment possibilities include fixed and rotary-wing manned and unmanned aircraft.

PHASE II: Based on the optimal solution(s) identified in Phase I, develop prototype systems and demonstrate in controlled field conditions.

PHASE III DUAL USE APPLICATIONS: Precision re-supply in search/rescue and disaster and humanitarian relief situations.

SOCOM 02–004 TITLE: Tactical Antenna Switching and Positioning System (TASPS)

TECHNOLOGY AREAS: Electronics, Information Systems

OBJECTIVE: Design and build an inexpensive lightweight portable Tactical Antenna Switching and Positioning System to be carried aboard and employed on US Navy ships without accessing permanently installed Navy communication assets. The system should be capable of unattended function, and continuous tracking of UHF satellites.

DESCRIPTION: The TASPS will provide a platform for a small lightweight UHF SATCOM antenna and an interface to maintain contact with geosycronus satellites. Contact must be maintained despite ship movement and periodic blockage of the line of sight (LOS) between the antenna and satellite by the ship's superstructure. The system must be capable of unattended operation.

The limited ability for co-use of Navy UFH SATCOM assets creates a dire need for this capability. The Navy has limited SATCOM capabilities for additional users (i.e. those who are not part of the ship's normal company, but base on the ship on a temporary basis). Temporary personnel are required to install additional UHF SATCOM systems. Advantaged antenna placement is in high demand on these ships and special permissions are needed to access the best placement areas. With this proposed system the user is able to board a USNS ship and install systems with little coordination or impact to vital ship's communications and radar systems.

The currently used system employs two directional antennas. The system maintains each antenna's lock on the satellite by turning the antenna at the direction of either a GPS or compass feed. When the ship's superstructure blocks one antenna the system switches to the other antenna. The current system, however, does not work well. The system does not maintain the antenna's lock on satellites well, and high winds further disrupt the directional antenna's tracking. The user envisioned system would interface two UHF SATCOM radios (AN/PRC-117F or equivalent) using one small, man-portable Omni-directional antenna on each side of the ship. The system would switch between the two antennas when the LOS to the satellites is blocked and employs amplifiers and pre amplifiers to make up for the omni-directional antenna's lack of gain. Current technology might also allow a system with directional antennas that are adjusted in accordance with the satellite signal. As the ship turns and signal strength decreases, the antenna automatically turns to maintain its tracking. The current system and user's envisioned future system descriptions are provided not to dictate to potential vendors an approach to the problem, but to help make clear what the problem is. The user is open to innovative and creative solutions to maintaining UHF SATCOM communications while onboard ship.

Regardless of the solution devised, there are several requirements that the system must meet. It must accommodate transmit RF power, in the UHF frequency range (225-400MHz), of 100 watts per channel. It must provide minimal attenuation of the receive signal, to provide maximum possible receive signal level at the radio system. The system must function in an ocean environment, which includes but is not limited to high winds (in excess of 50 knots) and sea spray. The system must be DAMA compliant. The system must be capable of being transported on commercial aircraft and should be contained in not more than two hardened cases weighing not more than 60 lbs. each.

PHASE I: Develop overall system design that includes specification of antenna switching and positioning technology, system specification, and protocol operation.

PHASE II: Develop and demonstrate a prototype system in a realistic environment. Conduct testing to prove feasibility over extended operating conditions.

PHASE III DUAL-USE APPLICATIONS: This system could be used in a broad range of military and civilian applications where automatic RF switching and antenna tracking are necessary. Uses on board Coast Guard and Drug Enforcement vessels are potential candidates for this technology.